REMARKS

Applicants respectfully request reconsideration and allowance of the pending claims.

I. Status of the Claims

Claims 1 through 69 remain pending. No claims have been amended herein.

II. Claim Rejections Under 35 U.S.C. §103(a)

Reconsideration is requested of the rejection of claims 1-5, 9-12, 17-36, 40-43, and 48-69 as being obvious over Seitz et al. (U.S. 5,925,595) alone or in combination with Asrar et al. (WO 2008/082901).

Claim 1 is directed to a pesticidal material comprising a substantially water-immiscible core material, the core material comprising a pesticide and being encapsulated in a shell having a predetermined permeability with respect to the core material, ... wherein the shell of the microcapsule is formed by an interfacial polymerization of a polyisocyanate with other monomers in an encapsulation shell-forming polymerization system, said other monomers comprising a principal amine and an auxiliary amine, ... Independent claims 24, 25, 32, 55, and 56 contain similar requirements.

The pesticidal material defined by claims 1, 24, 25, and 32 and the agricultural formulation of claims 55 and 56 thus requires the shell wall of the microcapsule be prepared by reacting a polyisocyanate and a blend of a principal amine and an auxiliary amine. As further explained herein, Seitz et al. do not disclose or suggest the preparation of a pesticial material via a blend of amines, nor would their disclosure have made such a pesticidal material obvious. Accordingly, the

rejection of claims 1, 24, 25, and 32 and their dependent claims should be withdrawn.

Moreover, as further shown by the attached Declarations of Inventors Michael Seitz, Yiwei Ding, and Ronald Brinker, the disclosures relied upon by the Examiner in the Asrar '901 reference represent the work of the four inventors in the instant application, and thus cannot be relied upon in an obviousness rejection. Although we do not yet have the signed declaration of Jawed Asrar relating to the '901 reference, it is respectfully submitted that the testimony of the other three inventors confirming that the relevant disclosure of the '901 reference as relied on by the Examiner is identical to that of US 6,992,047 and is the work of the four inventors in the instant application, taken together with the earlier declarations of all four inventors establishing that this disclosure as appearing in '047 is the work of the same four inventors, should be sufficient to establish that the relevant disclosure in the '901 reference is the work of the same four inventors. Thus, the rejection based on the combination of Seitz et al. and Asrar '901 should be withdrawn as well.

A. <u>Rejections Over Seitz et al. alone</u>

Seitz et al. do not disclose or suggest the preparation of a pesticial material via a blend of amines, nor would their disclosure have made such a pesticidal material obvious. This response is accompanied by a Declaration by David Z. Becher, a person skilled in the art of slow release technologies by virtue of his experience in the development of such technologies since 1980. He has reviewed the pending claims, the graphical representations of the data submitted in the response filed with the Office on October 26, 2009, and the Seitz et al. reference.

David Becher's Declaration establishes that the use of a blend of amines in the preparation of the pesticidal materials defined by the claims yields results that were neither expected nor predictable in view of the Seitz et al. disclosure. Additionally, the various manipulations employed by Seitz et al., such as the unexplained addition of a thickener to the formulation, asserted by the Examiner as effective to control the half life of release do not suggest the use of multiple amines in preparation of the pesticidal materials defined by the claims.

Seitz et al. disclose a method of producing a microencapsulated pesticide. The pesticide is encapsulated in a polyurea shell wall prepared from three components: (1) a trifunctional adduct of a linear aliphatic isocyanate, (2) an aliphatic linear diisocyanate, and (3) a polyamine. The rate of release of core material through the spherical shell wall is stated to be directly proportional to the relative amounts of the trifunctional adduct of a linear aliphatic isocyanate and the aliphatic linear diisocyanate.

Seitz et al. do not disclose or suggest using more than one amine to prepare their microencapsulated pesticide nor do they disclose any exemplary formulations containing more than one polyamine, nor would their disclosure have caused the ordinarily skilled person to modify Seitz et al. in order to meet each of the claim elements, in particular, the claimed requirement for interfacial polymerization using a principal amine and an auxiliary amine. Accordingly, Seitz et al.'s disclosure cannot render the claims obvious.

Seitz et al. disclose amines useful for reacting with the trifunctional adduct of a linear aliphatic isocyanate and the aliphatic linear diisocyanate at Col. 8, lines 1-8. They are

stated to be "expected to function adequately." The polyamine is added to the composition in order to react with the isocyanate components to form the desired polyurea and to avoid the undesired hydrolysis of the isocyanate. Seitz et al. do not disclose or suggest using more than one amine to prepare their microencapsulated pesticide nor do they disclose any exemplary formulations containing more than one polyamine. Moreover, a statement that the amines that Seitz et al. suggest using are "expected to function adequately" is not a disclosure or suggestion of multiplying the number of amine species. It merely suggests that each of the amines in the list is functional and thus one may be substituted for another. It is not a suggestion of the very different idea of using two or more amines, which is the inventive concept that applicants have discovered and now claim.

Moreover, the ordinarily skilled person would not have teased any suggestion to use multiple polyamines out of the Seitz et al. disclosure. The manner in which the Seitz application was drafted showed that the inventors thereof and the draftsperson of the patent application were capable of disclosing or suggesting that certain components of the Seitz microcapsules should be multiplied. For example, the gist of the Seitz et al. invention is toward using two different polyisocyanates, a diisocyanate and a triisocyanate.

Seitz et al. also disclosed and suggested other component species that may be multiplied. For example, Col. 8, lines 17-23 states:

> Any water immiscible liquid, low melting solid (M.P.<80°C), or oil solution of a water insoluble material can be encapsulated by this method. Agricultural pesticides are one suitable example. Herbicides, such as the acetanilides alachlor,

> acetochlor, and butachlor, are particularly preferred core materials. ***More than one herbicide could be included in the core of the same microcapsule.***

See also, Col. 8, lines 24-24:

> Other agriculturally acceptable chemicals can also be included in the core, in addition to or in place of a herbicide. ***In one preferred embodiment, the core contains both a herbicide and a safener.***

See also, Col. 8, lines 35-46:

> ***The core of the microcapsules can optionally contain one or more solvents,*** which can be selected to modify the release rate of the capsule contents. Suitable solvents include ones that are poor solvents for the shell wall, such as paraffinic oils having about 12-28 carbon atoms, and alkylated biphenyls or naphthalenes. Examples of such materials are Norpar 15, Exxsol D 110 and D130, Orchex 692 (all from Exxon Co.); Suresol 330 (from Koch); and diisopropyl naphthalene. Suitable solvents also include ones that are good solvents for the shell wall, such as highly aromatic solvents or esters like Aromatic 200 (Exxon), Citroflex A-4 (Pfizer), and diethyl adipate.

So, when Seitz et al. wanted to, they had described multiplication of certain components, specifically, the isocyanate species, the herbicides, the core materials, and the core solvents. No such disclosure or suggestion was ever made with respect to the polyamine. Seitz et al.'s polyamine disclosure contained no language that suggests multiplication of polyamine species, such as "combinations thereof" or "more than one." See Col. 8, lines 1-8:

> The preferred polyamines are diethylene triamine and triethylene tetraamine, but other similar polyamines are also expected to function adequately. Examples of other suitable polyamines are iminobispropylamine, bis(hexamethylene)triamine, polyoxypropylenetriamines, amine epoxy adducts, and the alkyl diamines from ethylene diamine up to hexamethylene diamine (i.e., in

which in which the alkyl group has from about 2-6 carbon atoms).

Language suggesting multiplication is simply not there. Seitz et al. thus disclosed and suggested various polyamines that can be "expected to function adequately" but Seitz et al. appeared not to contemplate and certainly did not disclose or suggest the use of "combinations of" amines or "more than one amine." Since Seitz et al. disclosed other components that could be multiplied but specifically did not make this suggestion with regard to amines, the ordinarily skilled person would have read Seitz et al.'s disclosure and the Examples as only suggesting substitution of polyamines and not multiplication. For any component that Seitz et al. wanted to use one, two, or more species, Seitz et al.'s specifications shows that they were perfectly capable of suggesting that idea. Given the lack of any suggestion of amine multiplication in Seitz et al., there is nothing in Seitz et al. that would have given the ordinarily skilled person reason to make the modification the Office, *having the benefit of applicants' disclosure*, now asserts is obvious.

Additionally, in rejecting claim 1 and the other independent claims over Seitz et al., the Office has asserted, "It is generally *prima facie* obvious to combine prior art elements according to known methods to yield predictable results. See MPEP 2141 III(A)." MPEP §2143 Part A. sets out the requirements the Office must show to support *prima facie* obviousness based on the Office's cited rationale:

A. Combining Prior Art Elements According to Known Methods To Yield Predictable Results

> To reject a claim based on this rationale, Office personnel must resolve the *Graham* factual inquiries. Then, Office personnel must articulate the following:
>
> (1) a finding that ***the prior art included each element claimed,*** although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference;
>
> (2) a finding that one of ordinary skill in the art could have combined the elements as claimed by known methods, and that in combination, each element merely performs the same function as it does separately;
>
> (3) a finding that one of ordinary skill in the art ***would have recognized*** that the results of the combination ***were predictable;*** and
>
> (4) whatever additional findings based on the *Graham* factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

If these conditions are not met, the Office's rationale is not sufficient to support *prima facie* obviousness, and the rejection should be withdrawn. The cited Seitz et al. reference fails to meet the first condition required by MPEP §2143 Part A. since the Seitz et al. reference does not include "each element claimed," in particular, the use of both a principal amine and an auxiliary amine to prepare the microcapsule shell wall, as explained above. Again, the manner in which the Seitz et al. publication was drafted shows that the inventor and draftsperson were fully capable of suggesting multiplication of certain components, but they failed to do so with respect to amines. The specification does not use any language suggestive of multiplying the amines such as "combinations of amines" or "more than one amine." However, the specification does use such

language with respect to isocyanates, herbicides, and solvents. Seitz et al.'s failure to disclose or suggest multiple amines means that their disclosure fails to meet the first condition of MPEP §2143 Part A. They only disclosed that each of the disclosed amines is "expected to function adequately" which suggests substitution, but not multiplication. Any suggestion otherwise by the Office can only be the result of hindsight in view of applicants' disclosure.

With regard to the third condition, the results achieved via the use of a blend of amines, i.e., a principal amine and an auxiliary amine as required by claim 1, were not predictable in that the blend of amines yields ***unexpectedly*** superior results with respect to the control and reliability of the half-lives of the microcapsules prepared thereby. With regard to unexpected results, MPEP 716.02(a) Part II. states:

> **II. SUPERIORITY OF A PROPERTY SHARED WITH THE PRIOR ART IS EVIDENCE OF NONOBVIOUSNESS**
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> Evidence of ***unobvious*** or ***unexpected*** advantageous properties, ***such as superiority in a property the claimed compound shares with the prior art***, can rebut *prima facie* obviousness. "Evidence that a compound is ***unexpectedly superior*** in one of a spectrum of common properties . . . can be enough ***to rebut a prima facie case*** of obviousness." No set number of examples of superiority is required. *In re Chupp*, 816 F.2d 643, 646, 2 USPQ2d 1437, 1439 (Fed. Cir. 1987)

Herein, as shown by the data submitted in the Response to Final Office Action on October 26, 2009 and as established by the data compared in the attached Declaration of David Z. Becher, a skilled person in the art of slow release technologies, the preparation of microcapsules using a blend of a principal amine and an auxiliary amine unexpectedly resulted in a degree of reliability and control of half life of release that could not have been predicted from Seitz et al.'s disclosures and

examples. Given that the ordinarily skilled person could not have predicted such superiority of control and reliability of half life of release from Seitz et al.'s disclosure, *prima facie* obviousness cannot be found herein for failure to satisfy all of the conditions -- in particular, the third condition -- required by MPEP §2143 Part A. See, in particular, the following paragraphs of the Becher Declaration:

> **(13)** Seitz et al. recognized that all the amines that were listed in their disclosure have the same function, which was to react with the isocyanate functionality present on the isocyanate molecules. Seitz et al. further enabled the ordinarily skilled person to predict that each of these individual amines would function adequately. ***However, Seitz et al.'s disclosure and data would not have made it predictable that the use of a primary amine and an auxiliary amine at varying ratios would provide superior control of the release rate.*** ***...***
>
> **(14)** It is important to keep these differences in scale in mind if one is to compare the Seitz et al. data with the half lives of release obtained from the microcapsules of the present application, which were prepared using a blend of a principal amine and an auxiliary amine. The data are directly comparable since the difference between the half lives and their reproducibility result from the substitution of a polyisocyanate with a polyamine. A comparison of these data yields the following conclusions, among others, regarding the exceedingly and unexpectedly superior control of half life of release obtained by using a blend of amines over a blend of polyisocyanates:
>
> **(15)** First, the half lives of release of the Seitz et al. examples vary widely with relatively minor changes in the relative proportions of the polyisocyanates. Compare this to the half lives of release of the present application's examples, which show far less variability in half life with any given increment of change in the relative proportions of polyamines. ***Nothing in Seitz et al.'s disclosure***

would have given the ordinarily skilled person the ability to predict that the half life of release could be so reliably controlled by varying the relative proportion of the amines in a polyamine blend. This is thus one unexpected benefit of using a principal amine and an auxiliary amine to prepare the microcapsule shell wall.

(16) Second, many of the half lives of release of the Seitz et al. examples are excessively long and thereby result in commercially impractical pesticidal materials. ... The data show that only minor variations in the relative ratio of polyisocyanates can alter the release rate characteristics widely from short half lives to exceedingly long half lives. Only a select window of polyisocyanate proportions yields microcapsule release rates of commercially acceptable durations using Seitz et al.'s method. Given the steep rate of change in half life versus isocyanate ratio, one skilled in the art would have very little confidence that the acceptable window would be reproducible. In the present application, the entire range of polyamine blends yield commercially useful microcapsule release rates. For example, over the entire range of relative proportions of amines, the half life varies from about 1 day to about 26 days. Significantly, modest variation in amine ratio does not throw the release rate out of control. Depending upon soil conditions, climate, the crop, the types of weeds that may be present, etc., a commercial use may be found for each and every example of the inventive pesticidal material. This contrasts sharply with Seitz et al., whose examples show only a few of the microcapsules (e.g., some of the microcapsules having less than 10% N3200 or greater than 80% N3200) have half lives of comparable duration, and the extreme sensitivity of half life to small changes in proportions makes quality control difficult, if not impossible. ***Nothing in Seitz et al.'s disclosure would have given the ordinarily skilled person the ability to predict that the entire range of relative proportions of the amines in a polyamine blend yield commercially viable pesticidal materials while only select, narrow and potentially unstable windows of proportions of isocyanates result in commercially viable controlled release materials using the Seitz et al. method.*** Therefore, this is another unexpected

benefit of using a principal amine and an auxiliary amine to prepare the microcapsule shell wall.

(17) ...

(18) In conclusion, it is agreed that Seitz et al. teach that the ratio of two isocyanates may be varied to control permeability. However, Seitz et al. do not disclose or suggest departing from that concept and using a blend of amines for the purpose. It is also agreed that the release rate can be modified by, e.g., adding solvents to the core or other materials such as safeners. However, one skilled in the art would not have perceived this as leading to the entirely different concept of using a blend of amines for the shell. Finally, it is also agreed that two components can be released at different rates, depending on their solubility and molecular size. However, this does not suggest to one skilled in the art the entirely different concept of using a blend of amines to control release rate. It may even be the case that a thickener in the formulation slurry may affect release rates (but see the above discussion in which I point out the reasons why this is probably not so). But again, the use of a thickener does not suggest to one skilled in the art the entirely different concept of using a blend of amines to control release rate. ***It is my view therefore that Seitz et al. neither disclose nor suggest the use of a principal amine and an auxiliary amine in the preparation of polymers useful as microcapsule shell wall materials nor does Seitz et al.'s disclosure provide any reasonable expectation that the use of a blend of amines enables superior control of the release rate properties of microcapsules prepared thereby.***

The above excerpt from the Declaration of David Z. Becher thus establishes that the claimed pesticidal material comprising a polymer shell wall prepared by polymerizing isocyanate and a blend of amines yields superior results that would not have been expected or predictable from the Seitz et al. method of

microencapsulation. Accordingly, the third condition of MPEP §2143 Part A is not met, and the rejection should be withdrawn.

The Office has raised several objections in the Advisory Action mailed on November 6, 2009 in asserting that the arguments made in the Response filed with the Office on October 26, 2009 are not persuasive. First, the Office asserted, "Applicant's arguments and graphical representations of the data in Seitz are not persuasive because they are inconsistent with the graphical representations of the data already presented by Seitz, ... " David Becher has reviewed the graphical presentations of the data in that Response and has come to the following conclusion set forth in his Declaration:

> **(3)** I have also reviewed the graphical representation of half life data from Seitz et al. as presented in the Response to Final Office Action, filed with the Office on October 26, 2009 in response to the Final Office Action dated August 27, 2009. The Examiner has asserted that the graphical representation in the Response is inconsistent with the graphical representations of the data already presented by Seitz et al. I have once more reviewed the data. ***Based on that review, I can and do confirm that the graphical representation of the half life data is fully consistent with Seitz et al.*** The difference between the graphical representation of the half life data in the Response and the graphs in Seitz et al. is the presentation of additional data that Seitz et al. disclosed but did not plot.

Accordingly, the graphical representation is consistent with Seitz et al., and the Office's objection to the presentation of the data is unfounded.

Second, the Office asserted, "Regarding the half lives of release of Seitz, it is noted that 4 of the 5 data points presented in Figure 1 of Seitz are [within] the half-life range taught by Applicants, and therefore Applicant's arguments that

"many" of the half lives are excessively long are unpersuasive." David Becher has reviewed the Seitz et al. data in view of the Office's assertion and has come to the following conclusion:

> **(4)** The Examiner has asserted that four of the five data points in FIG. 1 of Seitz et al. fall within the half life range taught by the applicants. It is my understanding that the disclosure of the cited reference is only relevant inasmuch as it relates to the claims. The claims require a half life of release of between 5 and 100 days. ***Only two of the data points in Fig. 1 of Seitz et al. are within the 5 to 100 day half life range called for in claim 1, and the graph depicted in FIG. 1 of Seitz et al. depicts six data points, not five.*** In fact, out of a total of 22 experiments conducted by Seitz et al. in which the half life of release was measured, only eight samples exhibited half lives of release within the ranged required in claim 1. Regardless of the number of samples having half lives falling within the claimed range, none of the samples were prepared using at least two amines.

The Seitz et al. data are only relevant insofar as they relate to the claims. David Becher has reviewed the data under this proper standard and has concluded that relatively few of the formulations prepared by Seitz et al. meet the half life limitations of the claims. Regardless of the exact number of samples having a half life within the claimed range, *none* of those samples were prepared using a blend of amines, as required by the present claims.

The Office has also stated "Applicant's arguments regarding the reproducibility of the data in Seitz (pages 34 of Remarks) are unpersuasive because the two Examples compared by Applicants are not identical; for example, Example 17, which has a longer half life, also includes the presence of a thickener, which is not present in Example 14." David Becher has reviewed the Seitz et al. specification and examples in view of the Office's

assertion regarding the influence of the thickener on half life and has concluded:

> **(5)** In the Advisory Action, the Examiner has perceived potentially interesting patterns in the Seitz et al. data as related to the presence or absence of a thickener. However, the person having ordinary skill in the art would not likely have drawn such a pattern from the data. A particular shortcoming in Seitz et al. that would have likely prevented the ordinarily skilled person from perceiving the patterns that the Examiner perceived is the lack of disclosure in Seitz et al. as to how the presence or absence of a thickener relates to release rate. Moreover, Seitz et al. do not describe the thickener or otherwise explain in their specification the significance of using the thickener in some formulations. That is, Seitz et al. do not describe the properties of the thickener. It is only mentioned in some of the examples, but Seitz et al. do not comment on the reason for its inclusion. Finally, to the extent that the Office has perceived an interesting correlation between the presence of a thickener and half life of release, it should be understood that correlation does not equate to causation.
>
> **(6)** In any event, it cannot be ignored that whatever patterns may arguably be drawn from the Seitz et al. data they still fail to resolve the erratic, volatile character of those data. That is, as I explain more fully herein, the gross variation in release rates among Seitz et al.'s working examples cannot be attributed to the presence or absence of a thickener. If some of the variation can be attributed to the thickener, such relationship (i) would not have been either expected or perceived by one of ordinary skill in the art and (ii) cannot be explained by any evidence or theory known to me or otherwise of record in this application. Assuming hypothetically that the correlation perceived by the Examiner would have been perceived by one of ordinary skill, it would have been dismissed as a random effect unrelated to parameters for which an effect on release rates could be rationally explained.

(7) Further to the first point in the above paragraph, the person having ordinary skill in the art would not have considered the addition of a thickener after polymerization to have any effect on the release rate. Kelzan© is the trade name for xanthan gum. Xanthan gum is highly soluble in water. Materials used to prepare the microcapsules, including the herbicidal active, the safener, the isocyanates, and the core solvent, if added, are substantially immiscible in water. I cannot perceive any condition which would cause the thickener to become incorporated into the microcapsule, either in the core or as part of the shell wall. In fact, Seitz et al. disclose that the Kelzan© xanthum gum is added to the formulation only after the microcapsules are prepared, as I further explain below.

(8) ... The Kelzan© would appear to have no role within the core of the microcapsule and would not become incorporated into either the core or the shell wall, and indeed does not.

(9) The ordinarily skilled person would not have expected the Kelzan© xanthan gum to influence the properties of the shell or the core of the microcapsules and thereby affect the half life of release because the Kelzan© xanthan gum is added to the aqueous phase of the formulation only after polymerization is complete. See Col. 15, lines 1-15 of Seitz et al., which discloses that the polymerization reaction is carried out to completion, and only after the polymerization reaction is completed, the "Formulation" is made up by adding Kelzan© xanthan gum, water, and other ingredients to the slurry. Since Seitz et al. affirmatively teach that release rates depend primarily on the permeability of the shell wall, there is no apparent way in which the thickener, present only in the aqueous phase and added only after the microcapsules are prepared, could affect the release rate. At most, Kelzan© xanthan gum might affect mass transfer coefficients between the exterior of the cell wall and the bulk aqueous phase in which the particulate material is suspended (e.g., by increasing the viscosity of the aqueous phase). However, according to Seitz et al.'s own description of the method for determining the half life of release at Col. 11, lines

30-46, the formulation is diluted with a large enough volume of water to be treated as a perfect sink. The half life testing method therefore requires the dilution of the Kelzan® xanthan gum so significantly that its presence is merely incidental compared to microcapsule formulations that were prepared without thickener. Even before dilution, the examples indicate that the quantity Kelzan® xanthan gum added is a small fraction of the amine, isocyanate, or water. Example 16 of Seitz et al. describes preparing a formulation with the following components:

--1.17 g Kelzan® xanthan gum
--78.69 g DES N3200
--25.84 g m-TMXDI
--23.47 g TETA
--1600 g acetochlor
--about 7820 g water in the entire formulation

In this example, the concentration of the Kelzan® xanthan gum is roughly 0.015 wt.% solution compared to the total quantity of water. The half life test requires diluting 150 mg of slurry into another 1000 g water, which is stated to be a volume sufficient to act like a perfect sink. The Kelzan® xanthan gum is therefore diluted by an additional dilution factor of roughly 6667 times. In the perfect sink, the Kelzan® xanthan gum concentration is so low that the ordinarily skilled person would not have expected the gum to have any material effect on viscosity or otherwise on mass transfer of active from the external surface of the shell walls. Moreover, even if there were an effect on mass transfer from the cell wall to the external aqueous phase, e.g., by an effect on viscosity, this would not have been expected to limit the rate of release because Seitz et al. teach that the release rate is controlled by other variables, primarily the permeability of the shell wall. Seitz nominates five variables as affecting release rates: 1) permeability of the shell wall as controlled by the ratio of isocyanates at Col. 4, line 64 to Col. 5, line 12, 2) wall thickness at Col. 1, lines 53-62, 3) nature of the active, or mixture thereof with, e.g., a safener at Col. 4, lines 21-32, 4) selection of solvent at Col. 5, lines 29-37, and 5) temperature at Col. 20, lines 1-17. All these variables have been nominated by Seitz et al. as affecting the

permeability of the shell wall. No such significance is placed on the thickener. Seitz et al. do not suggest any effect of the thickener on half life; in fact, Seitz et al. offer no explanation of any purpose for the thickener in the first place.

(10) Even if the ordinarily skilled person would have perceived, like the Examiner did, a correlation between thickener and the half life of release and further if the ordinarily skilled person credited the thickener with causation, it is my view that the ordinarily skilled person would not have discovered from this realization any reason to use a blend of amines. Should an ordinarily skilled person have construed Seitz et al. in the manner suggested by the Examiner, at best it would have restored confidence in the Seitz et al. technique of preparing microcapsules with a blend of isocyanates. More directly, it would arm the ordinarily skilled person with an entirely different weapon for controlling the release that is unrelated to the invention disclosed by Seitz et al. or the invention claimed herein. But in providing an explanation for some (but not all) of the capricious variation in half life reported by Seitz et l., attributing correlation/causation to a thickener might conceivably have restored confidence in the Seitz et al. scheme of varying the isocyanate ratio, from which the artisan would otherwise have been deterred by inspection of the data.

(11) However, a careful review of the Seitz et al. data reveals that contrary to the Examiner's assertions, the use of a thickener does not have any consistent or predictable effect on half life of release. Example 16 of Seitz et al. is comparable to Example 13 of Seitz et al. In Examples 13 and 16, the ratio of Desmodur N3220 to TMXDI is 67%:33%. Example 17 of Seitz et al. is comparable to Example 14 of Seitz et al. In Examples 14 and 17, the ratio of Desmodur N3220 to TMXDI is 80%:20%. In Examples 16 and 17, thickener was added to the slurry to make up the Formulation. Examples 13 and 14 were formulated without thickener. The ratio of half life of Example 16 (thickener) to Example 13 (same formulation but no thickener) is 1.83:1. The ratio of half life of Example 17 (thickener) to Example 14 (same formulation but no thickener) is 11.3:1. Therefore, if causation

is to be assumed, the thickener increased the half life of release by about 80% when used in one sample, but increased the half life by more than an astounding 1100% in another sample. If the thickener is assumed to have caused the increase in half life, these data do not allow any predictability as to the extent of the increase, and Seitz et al. provided no disclosure whatsoever to explain these differences or in any way resolve the large degree of variation. Additionally, none of samples in Examples 7-12, which were used to construct the graph on page 28 of the Office Action Response, employed a thickener, and the data are still erratic. No explanation is given in Seitz et al. for the erratic nature of these results, and the erratic nature of these results cannot be attributed to the thickener since no thickener was used in any of the Examples 7-12.

(12) Seitz et al.'s use of a blend of two isocyanates results in microcapsules exhibiting a high degree of volatility in terms of half life. In the graphical representations submitted in the Response to Final Office Action, I observe precipitous slopes in half life vs. composition curves, which is prevalent in both: a) formulations that contain no thickener and b) formulations that contain a thickener. For example, the table and graph on page 27 of the response to the August 27, 2009 Final Office Action shows very steep increasing slope, i.e., a dramatic increase in half life, from Example 2 (50%:50% ratio) to Example 3 (33%:67% ratio), and then a very sharp decrease in slope, i.e., a dramatic decrease in half life from Example 3 to Example 4 (10%:90%). There is thus large variation in half life over relatively little compositional change. I observe the same volatility in the graph on page 28 of the response to the August 27, 2009 Finally Office Action. The latter comparisons were made in samples that did not contain thickener.

Thus, although the Office may be credited with an astute observation that a thickener appears to have influenced the half life, the ordinarily skilled person would not necessarily have concluded that the Kelzan® is responsible for the variation in

release rates since it does not become incorporated in the core or the shell wall of the microcapsule. Even if Kelzan® may affect half life of release via a mass transfer effect in a fully concentrated composition, the Kelzan® is present in only the slightest concentration in Seitz et al.'s half life test, which requires dilution suitable to create a "perfect sink." Additionally, the half live variations are very erratic, even among those microcapsule formulations prepared without any thickener at all.

However, even if the ordinarily skilled person would have made any or all of these observations regarding the thickener as of the filing date of the present application, the ordinarily skilled person would not have discerned any insight that would have led toward the distinguishing feature of the present claims, which is preparing the pesticidal material using a blend of amines.

In sum, the Office has asserted that the ordinarily skilled person could have predicted success in using multiple amines in view of Seitz et al.'s disclosure of various amines that would have been expected to "function adequately." Disclosure of adequately functional substitutions for materials, however, is not a disclosure or suggestion of multiplying the materials. Additionally, Seitz et al. contain no disclosure of any advantage that may be obtained by such multiplication. It is additionally noteworthy that Seitz et al. expressly suggest multiplication of some materials -- isocyanates, herbicides, and solvents -- but do not provide even the slightest hint (e.g., no statement that "combinations of" amines are suitable) of multiplication of amines. Thus, the Office can only make an assertion that it would have been obvious or predictable to use multiple amines via hindsight.

Additionally, the present applicants, through inventive insight, have discovered that unexpectedly superior control over the half life of release may be achieved via a blend of amines in the preparation of the pesticidal material of the present invention. The ordinarily skilled person would not have been able to predict this from Seitz et al.'s application, which, as explained above, shows only erratic control of half life via manipulation of isocyanates.

Finally, even if the ordinarily skilled person were to make the same astute observations regarding the thickener, the skilled person would have only concluded that the thickener may be relevant as a potentially useful tool for further manipulating half life, but nothing in Seitz et al. suggests that the skilled person in the art would not have been led from thickener to the relevant distinguishing limitation of the present claims, i.e., the multiplication of amines.

In view of the foregoing, applicants respectfully submit that the pending claims are patentable over Seitz et al. since the references fails to disclose or suggest each of the claimed elements and further since applicants' pesticidal material achieves results that are unexpectedly superior to those that could have been envisioned from the Seitz et al. disclosure. Accordingly, the rejection should be withdrawn.

With respect to claims 9, 22, 28, 29, 53 which require a difference in the between the respective Hildebrand solubility parameters of the core material and shell, these claims are further patentable since Seitz et al. neither disclose nor suggest how employing a principal amine and an auxiliary amine to prepare the shell wall would affect the overall solubility of the core material in the shell wall. Rather, applicants discovered and disclosed that the solubility of the core

material in the shell wall may be determined by, for example, calculating the Hildebrand solubility parameter and correlating that parameter to the relative ratios of a principal amine and an auxiliary amine used to prepare the shell wall polymer, as discussed in applicants' specification at paragraphs [0077] to [0081], and in particular, paragraph [0079].

B. Rejections Over Seitz et al. in view of Asrar '901

By virtue of the publication date of Asrar et al. (WO 2002/082901) and the priority date of the pending application, Asrar '901 is a §102(a) reference. Accordingly, according to the guidelines provided by MPEP §2132.01,

> **APPLICANT CAN REBUT *PRIMA FACIE* CASE BY SHOWING REFERENCE'S DISCLOSURE WAS DERIVED FROM APPLICANT'S OWN WORK**
>
> Applicant's disclosure of his or her own work within the year before the application filing date cannot be used against him or her under 35 U.S.C. 102(a). *In re Katz*, 687 F.2d 450, 215 USPQ 14 (CCPA 1982) (discussed below).

The reference may be removed "by submission of a specific declaration by the applicant establishing that the article is describing applicant's own work. *In re Katz*, 687 F.2d 450, 215 USPQ 14 (CCPA 1982)." This response is accompanied by Declarations under 35 C.F.R. §1.132 signed by three of the four co-inventors of the present application (Ronald Brinker, Yiwei Ding, and Michael Seitz) establishing that the disclosures relied upon in Asrar '901 represent the work of the group of inventors. We do not yet have the signed declaration of Jawed Asrar relating to the '901 reference. However, it is respectfully submitted that the testimony of the other three inventors confirming that the relevant disclosure of the '901

reference as relied on by the Examiner is identical to that of US 6,992,047 and is the work of the four inventors in the instant application, taken together with the earlier declarations of all four inventors establishing that this disclosure as appearing in '047 is the work of the same four inventors, should be sufficient to establish that the relevant disclosure in the '901 reference is the work of the same four inventors.

Accordingly, Asrar '901 is removed as a reference, and the rejection becomes one based on Seitz et al. alone. The claims are patentable over Seitz et al. alone for the reasons stated above. Thus, applicants request that this rejection be withdrawn.

CONCLUSION

The fee for a two-month extension of time is being submitted with this response. The Commissioner is hereby authorized to charge any underpayment or credit any overpayment of fees in connection with this response to Deposit Account No. 19-1345.

Respectfully submitted,

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